### SECTION S413 - SPEED HUMP

## S413-1 DESCRIPTION

Work consists of construction of speed humps, or installation of temporary speed humps, as required in Contract Documents and as directed by Project Manager.

For purposes of this specification, all references are in accordance with NYSDOT Standard Specifications (US Customary Units dated May 1, 2008) edition, including any addenda.

### S413-2 MATERIALS

## S413-2.01 Asphalt

Asphalt pavement is to be 9.5 F2 top course HMA 80 series compaction in accordance with NYSDOT Section 402 Hot Mix Asphalt (HMA) Pavements.

### S413-2.02 Tack Coat

Tack coat is to be diluted or straight tack coat in accordance with Section S407 Tack Coat.

## S413-2.03 Temporary Speed Hump

Temporary speed humps are to be prefabricated rubber product in accordance with traffic calming safety standards and specifications outlined by Institute of Transportation Engineers (ITE), and that are capable of being removed and reinstalled numerous times without showing signs of excessive wear and tear.

### **S413-2.04 Striping**

Striping is to be 60 mils thick 12 inch wide overlaid white plastic preformed permanent pavement marking tape material in accordance with NYSDOT Section 727-04 Permanent Pavement Tape, NYSDOT Standard Specifications (US Customary Units dated May 1, 2008).

## S413-2.05 Signs and Sign Posts

Signs and sign posts will be supplied and installed by Monroe County Traffic Engineering.

## **S413-3 CONSTRUCTION DETAILS**

## S413-3.01 General

At least 5 calendar days prior to commencing installation of speed humps, Contractor is to provide written notification of planned work to residents of street receiving such treatment, residents of any intersecting streets up to one block away, and to Project Manager. Project Manager will notify Office of Emergency Services, local City NSC Office, City School District and any other interested parties that installation of speed humps is scheduled to take place.

Notification to residents is to be type written, is to contain information informing residents of planned work, and is to be approved by Project Manager before distribution. Notification is to be placed in plastic bag with handles that have capability of being hung on door knob, and distributed to all residents as required.

In conjunction with construction of speed humps, Monroe County Traffic Engineering will install all required signage and sign posts. Contractor is responsible to coordinate installation of required signage and sign posts with construction of speed hump, and is to notify Monroe County Traffic Engineering at (585) 753-7733 minimum of 10 working days in advance of commencing construction of speed hump.

Existing street can be temporarily closed on daily basis and during working hours only while speed hump construction is taking place. Existing street must be fully accessible to vehicular traffic at end of each work day. Street closure is to be done with use appropriate traffic control signs and devices required to maintain and protect traffic, as directed by Project Manager and in accordance with *Manual on Uniform Traffic Control Devices for Streets and Highways* and *New York State Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways*, latest editions.

In locations where speed hump signage would fall within paved area, sign post sleeve is to be installed.

Adjacent areas disturbed or damaged during construction are to be restored, in kind, to satisfaction of Project Manager, immediately following completion of speed hump construction.

#### S413-3.02 Construction Performance Standards

Cross section and profile of each and every speed hump are to be surveyed to verify that speed humps have been constructed to required parabolic shape, and that it falls within required tolerance range.

Speed humps will be acceptable only if parabolic shape is within range of +0.03 and -0.06 feet of required theoretical elevations. Take any steps necessary to correct any deficiencies that fall outside of required tolerance range.

## S413-3.03 Speed Hump Installation - General

Speed humps are to be constructed of asphalt top course, across and 2 feet narrower than width of existing pavement, leaving 12 inch wide open area between outer most edge of speed hump and pavement edge for drainage purposes.

Use any method necessary to form parabolic shape and to achieve proper height of speed hump. One such proven method for forming parabolic shape of speed hump is to construct template from minimum 16 foot long wooden 2x10, with center portion of bottom of template cut into basic parabolic shape of speed hump, leaving 2 foot flat area at each end of template. To stiffen template and to minimize any bending of template, attach aluminum or steel channel section to top portion of template.

After initial placement of asphalt, before compaction and while asphalt is still fresh and pliant, form asphalt surface into basic parabolic shape using template. With flat ends of template resting on abutting pavement surface, drag or shimmy template across asphalt surface forming basic parabolic shape of speed hump. During compaction it may be necessary to remove excess asphalt material, or place additional asphalt material. Repeat template operation until speed hump is fully compacted and has achieved its proper height and shape.

Do not perform final rolling operation until required parabolic shape of each speed hump in turn has been verified in accordance with Subsection S413-3.02 Construction Performance Standards.

Pavement markings are to be installed using overlay method and as recommended by manufacturer.

## S413-3.04 Speed Hump (Existing Pavement)

Construct keyway 25 inches wide in shape of speed hump and across existing pavement where speed hump is to be installed. Keyway is to be constructed by saw cutting existing pavement minimum of 1-1/2 inches deep along outer most edge of speed hump, then milling on bias to 0 inch at inner edge of keyway. Thoroughly clean pavement surface, and apply tack coat making sure to completely cover surface area. Tack coat must be applied before placement of any new asphalt material, and between any and all subsequent asphalt courses.

# S413-3.05 Speed Hump (New Pavement)

Finish paving street with asphalt top course up to outer most limits of speed hump before constructing speed hump. Take extra steps to ensure that portion of asphalt top course placed within 12 inch wide open area between outer most edges of speed hump and pavement edge is properly compacted. Speed hump is to be constructed on top of binder course. Thoroughly clean pavement surface, and apply tack coat making sure to completely cover surface area. Tack coat must be applied before placement of any new asphalt material, and between any and all subsequent asphalt courses.

If Contractor elects to, or inadvertently, paves entire street without making allowances for speed hump construction, speed hump is to be constructed in accordance with Subsection S413.3.04 Speed Hump (Existing Pavement).

## S413-3.06 Temporary Speed Hump

Temporary speed humps are to be installed within 45 calendar days after Notice to Proceed has been issued, and removed after substantial completion of Project, as determined by Project Manager.

No more than 10 calendar days after removal of temporary speed humps, re-notification is to be done in accordance with Subsection S413-3.01 General, stating that temporary speed humps have been removed.

Speed hump warning signs are to be installed minimum of 10 calendar days in advance of installation of temporary speed humps. Speed hump warning signs are to be installed on sign posts at each temporary speed hump location, and at each end of street where temporary speed humps are being installed. Speed hump warning signs are to be covered until temporary speed humps have been installed.

Temporary speed hump is to be installed across and 2 feet shorter than width of existing pavement, leaving 12 inches wide open area between outer most edge of temporary speed hump and pavement edge for drainage purposes. Prior to installation of temporary speed hump, existing pavement area is to be thoroughly cleaned. Installation of temporary speed humps is to be in accordance with manufacturer's instructions. Maintain temporary speed humps, making any adjustments or re-installation necessary to ensure that temporary speed humps remain properly situated.

If temporary speed humps do not come pre-striped, pavement markings are to be installed using overlay method, and as recommended by manufacturer.

When project extends for more than one construction season requiring winter shutdown, temporary speed humps, hardware and speed hump warning signs are to be removed during first week of October, and reinstalled at same locations during week immediately preceding April 15th of following year. Before reinstallation of temporary speed humps, re-notification is to be done in accordance with Subsection S413-3.01 General.

For winter shutdown, upon removal of temporary speed humps, restore existing pavement, filling in all holes necessitated for installation of temporary speed hump anchoring system. Properly store and protect temporary speed humps, hardware and speed hump warning signs during winter shutdown.

After final removal of temporary speed humps and hardware, permanently restore existing pavement, filling in all holes necessitated for installation of temporary speed hump anchoring system.

As temporary speed humps and hardware become property of City of Rochester after final removal, any material that is damaged is to be repaired. Any materials that are damaged beyond repair, are to be replaced with new materials.

Temporary speed humps and hardware, are to be delivered to City's Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, (585) 428-7479. Street Maintenance Division requires minimum of 2 working days advance notice to make arrangements for delivery of salvaged materials.

## S413-3.07 Temporary Speed Hump (Furnished)

Temporary speed humps and hardware, will be as furnished by City of Rochester.

To make arrangements for pick-up, Contractor is to call City's Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, (585) 428-7479. Street Maintenance Division requires minimum of 2 working days advance notice to make arrangements for pick-up of furnished materials.

Installation, removal, salvaging and repair or replacement of temporary speed humps and hardware is to be done in accordance with Subsection S413-3.06 Temporary Speed Hump.

Upon final removal, temporary speed humps and hardware are to be returned to City's Street Maintenance Division, 945 Mt. Read Boulevard, Rochester, New York, Monday through Friday, between hours of 8:00AM and 3:00PM, (585) 428-7479. Street Maintenance Division requires minimum of 2 working days advance notice to make arrangements for delivery of salvaged materials.

## **S413-4 METHOD OF MEASUREMENT**

Quantity to be measured for payment will be number of speed humps constructed, or number of temporary speed humps installed.

#### S413-5 BASIS OF PAYMENT

## S413-5.01 General All Items

Unit price bid for all items includes cost of: preparation and distribution of written notification; providing plastic bags; notifying and coordinating with Monroe County Traffic Engineering for sign and sign post installation; cleaning pavement; additional pavement preparation; and furnishing all labor, material and equipment necessary to complete work.

Restoration of adjacent areas disturbed or damaged during construction; furnishing and installing sign post sleeves, pavement markings; and maintenance and protection of traffic will be paid for under separate bid items.

## S413-5.02 Speed Hump (Existing Pavement)

Unit price bid also includes cost of: construction of keyway including saw cutting and milling; furnishing and installing asphalt pavement; template; tack coat; construction of speed hump; survey of cross-section and profile to verify parabolic shape of speed hump for quality control measures; correction of any deficiencies that fall outside of required tolerance range.

## S413-5.03 Speed Hump (New Pavement)

Unit price bid also includes cost of: furnishing and installing asphalt pavement; template; tack coat; construction of speed hump; survey of cross-section and profile to verify parabolic shape of speed hump for quality control measures; correction of any deficiencies that fall outside of required tolerance range.

## S413-5.04 Temporary Speed Hump

Unit price bid also includes cost of: providing, installing, maintaining, removing and delivery of temporary speed hump and hardware; repairing or replacement of damaged materials; notifying and coordination with City Street Maintenance Division; furnishing, installing, maintaining and removing speed hump warning signs and sign posts; permanent restoration of existing pavement, including filling in all holes necessitated for installation of temporary speed hump anchoring system.

For installation of temporary speed hump including winter layover, unit price bid also includes cost of: removing, storing, protecting and reinstalling temporary speed hump, speed hump warning signs and sign posts; renotification; temporary pavement restoration, including filling in all holes necessitated for installation of temporary speed hump anchoring system.

## S413-5.05 Temporary Speed Hump (Furnished)

Unit price bid also includes cost of: picking-up, installing, maintaining, removing and delivery of temporary speed hump and hardware; repairing or replacement of damaged materials; notifying and coordination with City Street Maintenance Division; furnishing, installing, maintaining and removing speed hump warning signs and sign posts; permanent restoration of existing pavement, including filling in all holes necessitated for installation of temporary speed hump anchoring system.

For installation of temporary speed hump (furnished) including winter layover, unit price bid also includes cost of: removing, storing, protecting and re-installing temporary speed hump, speed hump warning signs and sign posts; re-notification; temporary pavement restoration, including filling-in all holes necessitated for installation of temporary speed hump anchoring system.

# Payment will be made under:

ITEM NO.	ITEM	PAY UNIT
S413.01 S413.02 S413.03 S413.04 S413.05	Speed Hump (Existing Pavement) Speed Hump (New Pavement) Temporary Speed Hump Temporary Speed Hump (Winter Layover) Temporary Speed Hump (Furnished)	Each Each Each Each
S413.06	Temporary Speed Hump (Furnished) (Winter Layover)	Each